



AIRPORTS AUTHORITY OF INDIA
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SYLLABUS & WEIGHTAGE OF QUESTIONS FOR COMPUTER BASED
ONLINE EXAMINATION FOR THE POST OF
SR.ASSTT.(ELECTRONICS) UNDER SRD

Sl.No.	Post	Syllabus	Remarks
1..	Sr.Asstt.(Electronics) – under SRD	a) 70% questions on subject relating to educational qualification prescribed for the post. (As per annexure attached as PDF file). b) 30% on general knowledge, general intelligence, general aptitude, English etc.	Advertisement published in 2014 under SRD for SC & OBC


Syllabus for Recruitment in CNS at Induction Level
Senior Assistant (Electronics)

Analog Electronics

Diode circuits, Transistor biasings, Transistor amplifiers, FET amplifiers, Coupled amplifiers, Feedback amplifiers, Oscillators, Power amplifiers, Tuned voltage amplifiers, Operational amplifiers, and Regulated power supplies.

NETWORKS & TRANSMISSION LINES

1. **INTRODUCTION TO NETWORKS:** - Current & Voltage source as ckt. elements, transformation of sources. One port and two port networks, balanced and unbalanced networks, active and passive networks, symmetrical and asymmetrical networks, T, bridged T, lattice, ladder and L section.
2. **NETWORKS THEOREMS:** - KVL & KCL, loop and nodal analysis, thevenins, Nortons, Superposition, Maximum power transfer, tellegens, & reciprocity theorems.
3. **ATTENUATORS:** - Utility and classifications, symmetrical and asymmetrical T & types & their design, L type attenuators, minimum loss pads.
4. **Filters:** - use of filter network in different communication system, low pass, high pass, band pass and band stop filters, their attenuation, phase shift, and impedance characteristic, m-derived filters and their characteristics. Composite filters and their applications. Crystal filters, comparison of active and passive filter.
5. **TRANSMISSION LINES:** - different types of transmission lines and their application, primary and secondary constants, equivalent ckts. Infinite line characteristic impedance, current and voltage along an infinite line & their graphical representation. Propagation constant, attenuation constant & phase shift constant of the line. Relationship of characteristic impedance, propagation constant, attenuation constant & phase constant in terms of distributed constants. Conditions for minimum distortion & minimum attenuation of a signal on the line, necessity and ways of loading the line. Expression for voltage, current & impedance at a point on the line with and without losses. Expression for the input impedance of the line.


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... at Induction Level

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Transmission line at high frequency, losses at high frequency, transmission line as reactive components. Concept of reflection & standing waves on a transmission line. Definition of reflection coefficient, voltage reflection coefficient in terms of characteristic & load impedance. Definition of standing wave ratio (SWR), relation between VSWR & voltage reflection coefficient. Maximum and minimum impedance on a line in terms of characteristic impedance and VSWR.

Principles of impedance matching using single stub, comparison of open ckt. and short ckt. Stubs.

Expression for characteristic impedance of open wire, line & coaxial line.

DIGITAL ELECTRONICS

Introduction to Digital Electronics, Number System & Codes, Boolean Algebra, Logic Gates, Arithmetic & Logic Circuits.

COMMUNICATION ENGINEERING

1. Introduction to Radio Communications: - Principle and need of radio communications, characteristics of radio waves, radio frequency spectrum. Need of modulation in radio communication. Classification of radio communication systems. Definition and application of AM, FM, and pulse modulation.
2. AMPLITUDE MODULATION & MODULATION METHODS: - Analysis of amplitude modulation, S.S.B. and DSB, DSBSC, methods of AM linear and non-linear modulation methods. Shunt and Series plate modulators, balanced modulator.
3. FREQUENCY & PHASE MODULATION: - Analysis of frequency modulation, frequency spectrum. Phase modulation, analysis and comparison with FM. Varactor Diode modulator, reactance tube and Armstrong method for producing F.M. Pre-emphasis and De-emphasis ckt.

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4. **A.M. & F.M. DEMODULATORS:** - Classification and analysis of AM demodulation, linear diode detector, F.M. demodulators, slope and phase detectors, ratio detectors.
5. **PULSE MODULATION:** - Classification of pulse modulation, sampling and quantization, basic idea of PAM, PTM, PPM, and PCM, DM & ADM.
6. **Radio Broadcast Transmitter:** - Classification of radio transmitters, block diagram of AM transmitter and explanation of each block, frequency stabilization of AM transmitter, SSB transmitter and its explanation, block diagram of R.T. and Armstrong F.M. transmitter & its explanation, frequency stabilization of F.M. transmitter.
7. **RADIO RECEIVERS:** - Classification of radio receivers, principle of super heterodyning, block diagram of superhet. AM receivers and explanation of each block, choice of LO and IF, tracking and alignment block diagram of FM receiver and explanation of each block, study of AVC & AFC circuits.
8. **RADIO RECEIVER MEASUREMENT:** - Characteristics of AM & FM radio receivers, measurement of radio receivers' characteristics- such as sensitivity, selectivity, fidelity etc.
9. **ANTENNA:** Basic radiation principle, antenna parameters-Gain impedance, radiation pattern, radiation from thin linear antenna and folded dipole. Grounded antenna, long wire antenna, antenna arrays.
10. **RADIO WAVE PROPAGATION :** Basic modes and classification of radio wave propagation, ground wave propagation, sky wave propagation, ionosphere and its characteristics, space wave signal, effect of atmosphere and range of space wave propagation.

TESTING AND MEASURING INSTRUMENTS

1. **MEASUREMENT FUNDAMENTALS:**-Definition of measurement and instrument, explanation and importance of Accuracy, Precision, Sensitivity, Resolution, Range Span, Stability, Dynamic


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Response And Repeatability, Difference Between Accuracy, Precision.

Definition of errors, types of errors, systematic errors, instrumental errors, environmental errors, random errors, gross errors, effect of errors on measurement, sources of errors in measuring instruments, analysis and representation of errors.

2. **STANDARDS**:-Requirement of standards, international standards, primary and secondary standards, working standards, their meaning and differences in accuracy levels. Standards for physical quantities, concept of calibration check and periodic calibration of instruments.
3. **PMMC TYPE MULTIMETER AND POTENTIOMETER**:-
Measurement of voltage, current and resistance (series and shunt) using PMMC Galvo, range sensitivity and loading effect, extension of range, multi-range selection circuits.
Multimeter circuit, diagram and working, advantages and limitation of multimeter.
Basic potentiometer, its use for (a) measurement of voltage, (b) calibration of voltmeters.
4. **ELECTRONIC VOLT-OHM METERS**:-Principle and operation of VTVM, principle of operation, working and construction of transistorized balanced bridge type electronic voltmeter, its disadvantage, measurement of resistance on electronic multimeter. Basic principle of operation of chopper type electronic DC voltmeter, use of integrated circuits for electronic voltmeter.
5. **RESISTANCE AND IMPEDANCE BRIDGES**:-Introduction to resistance bridges, DC Wheatstone bridge, bridge sensitivity, Kelvins double bridge. General equation of bridge balance, types of sources and detectors, general form of AC Bridge, AC Wheatstone bridge, configuration, schematic, working principle and applications of Maxwell, inductance bridge, Hay's bridge and capacitance comparison bridge, RLC bridge-block diagram and explanation.
6. **CATHODE RAY OSCILLOSCOPE (CRO)**:- Block diagram schematic of cathode ray oscilloscope, block diagram of CRO, construction of cathode ray tube, types of CRT and their functions.

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Principle of waveform display, vertical and horizontal deflection stage, synchronization, special feature of dual trace, double beam, specifications of oscilloscope and their significance, front panel controls, types of oscilloscope probes-their characteristics and application, amplitude, frequency, time period and phase measurement using oscilloscope.

7. (A) **FREQUENCY MEASUREMENT:** - Frequency standards, primary and secondary standards of frequency and time, measurement of frequency by resonance and heterodyne methods.
(B) **AF Power Measurement.**
(C) **RF Power Measurement.**


COMPUTER ENGINEERING

1. **INTRODUCTION:** Definition of computer, classification of computer, difference between analogue and digital computer, computer generation, historical development of computer, block diagram of digital computer and its working, brief idea about machine language, assembly language and high level language, computer networking (LAN, WAN).
2. **INPUT-OUTPUT DEVICES:** I/P devices-punched tape, tape recorders, punched cards and key boards, O/P devices- printers, cathode ray tube (CRT), magnetic tape, punched cards.
3. **Memory elements:** Concept of primary and secondary memory, RAM, ROM, EPROM, static and dynamic memories, magnetic tape memory, hard disk, floppy disk, hard disk, floppy disk drives, tape cassettes and cartridges, digital recording techniques, memory organization.

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POWER ELECTRONICS

1. **THYRISTORS:** Silicon controlled rectifier, TRIAC, DIAC, UJT, their construction & working, phase control circuits of SCR & triac using UJT & DIAC as breakover device, SCR & TRIAC with inductive load, temperature control & light control using thyristor.
2. **CONTROL COMPONENTS:** Servomotor (AC/DC), synchros tachogenerator, eddy current clutch, relays & contactors pressure switch, temperature switch, float switch, limit switch, timing relays, phase failure relay, solenoid valves.
3. **INVERTERS:** Principle of inverters, single phase inverters, McMurray inverters, series and parallel inverters, three phase inverters, an introduction.


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